UNIVERSITY OF MALAYA

EXAMINATION FOR THE DEGREE OF MASTER OF ECONOMICS ACADEMIC SESSION 2016/2017: SEMESTER 1

EXGA6120: Advanced Microeconomics

Dec 2016/Jan 2017 Time: 3 hours

INSTRUCTIONS TO CANDIDATES:

This exam paper consists of two parts: Part A and Part B. Answer 1 question in Part A and all questions in Part B.

(This question paper consists of 5 questions on 4 printed pages)

**EXGA6120**

**PART A**

1. Given a one-output two-input production and indirect profit (n\*) function (Y) of the form:

*Y* = *xr-s-x 4*

n• = 0.082P10 w-1 0·5 W- 2o .4

* 1. Set up the profit maximization problem and show the first and second order conditions.
  2. Solve for both input demands.
  3. What is the output supply?
  4. Solve for the supply equation and input demand using Hotelling's Lemma.
  5. Compare and discuss the input demands found in (b) and (d).

(25 marks)

1. Two firms have the cost function *STC1* = Sq; + 400 and *STC2* = *Sqi* + 10q1 + 1000 where firm 1's output positively affects firm 2's cost. The two firms operate in perfectly competitive market facing output prices of P1 = $100 and P2 = $200.
   1. Determine the profit-maximizing outputs and profit for these two firms operating independently.
   2. Determine the socially optimal level of output and profits. Is it in the firms' interest to operate at these levels?
   3. Under what condition will tax and permits be used to define property rights under the 2 firm-economy.

(25 marks)

**PARTS**

1. From the following indirect utility function



* 1. Find the Marshallian demand curves for good 1 and good 2.
  2. Find the own-price and income elasticity associated with good 1.

c) Suppose q1 = 30, P1 = $1.50, q2 = 11, P2 = $5, and income (X) = $10.

Calculate the compensated own price elasticity for good 1.

(25 marks)

**2/4**

# EXGA6120

1. (a) Consider a pure exchange market with two goods (X and Y) and two consumers (1 and 2) with utilities

U1(X1,Y1) = 2 log X1 + log Y1

U2(X2,Y2) = log X2 + 2 log Y2

The initial endowments for consumer 1 is (2,1) and that for consumer 2 is (0,3).

1. Draw the Edgeworth box diagram for this exchange economy.
2. What would be the competitive equilibrium?

(17 marks)

(b) Anna and Bess are assigned to write a joint paper within a 24-hour period about the Pareto optimal provision of public goods. Let tA denote the number of hours that Anna contributes to the project and ta the number of hours that Bess contributes. The numeric grade that Anna and Bess can earn is a function 23/n(tA+t a), of the total number of hours that they contribute to the project. If Anna contributes tA, then she has (24-tA) hours in a day for leisure. Anna's utility function is LJA = 23/n(tA+ts) +

/n(24-tA), and Bess's utility function is U8 = 23/n(tA+t s) + /n(24-t a). If they choose the hours to contribute simultaneously and independently, what is the Nash equilibrium number of hours that each will provide?

(8 marks)

1. (a) Let there be *n* firms in an industry. Each firm I (i=1,2,3...n) produce a quantity of output qi and have a constant marginal cost Ci, so that firm i's cost function

Ci(qi)=Ci•qi. Define *Q* = *Lt=i qi* and assume that the industry faces linear demand

curve, P = A-BQ.

1. Show that when there are *n* firms playing a Cournot game,

*Lt=1 CA* - *Ct)*

*Q*= ( n + *l ) B*

and *p*= *A+Li=l C i*

n+l

(10 marks)

# 3/4

**EXGA6120**

1. Suppose all firms have access to the same production technology (C1=C for all
   1. and that there are many other potential firms that could enter the industry using this same technology. What is the competitive outcome in this competitive case? Find P and Q, and compare them to the limits of the Cournot P and Q as *n* oo.

(6 marks)

(b) Discuss the conditions for long-run equilibrium and efficient number of firms in oligopolistic competition.

(9 marks)

END

**4/4**